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Notice of Allowability	Application No.	Applicant(s)	
	09/446,641	HATAZAWA ET AL.	
	Examiner	Art Unit	
	Tracy Dove	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--
 All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 3/6/06.
2. ☒ The allowed claim(s) is/are 10 and 14-17.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>6/14/02</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with David Rozenblat on 3/17/06.

The application has been amended as follows:

--Cancel claim 30.--

Allowable Subject Matter

Claims 10 and 14-17 are allowed.

The following is an examiner's statement of reasons for allowance: the claims are directed toward a solid electrolyte battery comprising a solid electrolyte including a matrix polymer comprising a first polyvinylidene fluoride/hexafluoropropylene copolymer having a weight-average molecular weight of greater than 550,000 and less than 1,000,000 and a second polyvinylidene fluoride/hexafluoropropylene copolymer having a weight-average molecular weight of greater than 300,000 and less than 550,000. The content of hexafluoropropylene in each of the first and second polyvinylidene fluoride/hexafluoropropylene copolymers is not less than 1% and not more than 7% by weight of the copolymer. The matrix polymer comprises 30% or more by weight of the polyvinylidene fluoride/hexafluoropropylene copolymer having a weight-average molecular weight of greater than 550,000 and less than 1,000,000.

The prior art does not teach or suggest the claimed invention. Yasugata (JP 08-236095) teaches a separator comprises polyvinylidene fluoride (fluorocarbon polymer) having a weight average molecular weight of 50,000-2,000,000, preferably 100,000 to 1,000,000. Gao (5,756,230) teaches a method of improving the structural integrity of an electrode binder and a polymeric matrix component of an electrochemical cell by employing polymer blends comprising fluoropolymers. The fluoropolymer blends are described in col. 4, lines 19-67. Polytetrafluoroethylene and polyvinyl fluorides are preferred homopolymers and polyvinylidene fluoride-hexafluoropropylene is a preferred copolymer. Humphrey (EP 0730316) teaches at least one of the electrodes or the separator comprises a porous polyvinylidene fluoride (PVDF), the PVDF electrodes having an electrode material combined therewith and the PVDF separator having an electrolyte material combined therewith (4:13-18). The PVDF polymer may include either a homopolymer or a copolymer, wherein the copolymers are either heterogeneous or homogeneous copolymers of vinylidene fluoride and hexafluoropropylene.

None of the above cited reference teaches or suggests a solid electrolyte battery comprising a solid electrolyte including a matrix polymer comprising a first polyvinylidene fluoride/hexafluoropropylene copolymer having a weight-average molecular weight of greater than 550,000 and less than 1,000,000 and a second polyvinylidene fluoride/hexafluoropropylene copolymer having a weight-average molecular weight of greater than 300,000 and less than 550,000. The content of hexafluoropropylene in each of the first and second polyvinylidene fluoride/hexafluoropropylene copolymers is not less than 1% and not more than 7% by weight of the copolymer and the matrix polymer comprises 30% or more by weight of the polyvinylidene

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fluoride/hexafluoropropylene copolymer having a weight-average molecular weight of greater than 550,000 and less than 1,000,000.


Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

March 17, 2006


TRACY DOVE
PRIMARY EXAMINER
3/16